



# Learn & Master **Python.**

Classroom | Online | Corporate

# WHY

## School of Analytics

“As one of the INDIA's leading tech training and talent organisations, SOA helps individuals ranging from those at the start of their journey who want to learn Python to seasoned professionals looking to develop and extend professional services competencies, with training to get the most of Python.”



# Learning Pathway .

## 01 Language Fundamentals

- Introduction
- Features of Python
- Limitations of Python
- Flavors of Python
- Python Versions
- Identifiers
- Reserved Words
- DATA TYPES
- Base Conversions
- Slicing of Strings
- TYPE CASTING
- Fundamental Data Types vs Immutability
- Escape Characters
- Constants

## 02 Operators

- Arithmetic Operators
- Relational Operators OR Comparison Operators
- Equality Operators
- Logical Operators
- Bitwise Operators
- Shift Operators
- Assignment operators
- Ternary Operator OR Conditional Operator
- Special operators
- Operator Precedence
- Mathematical Functions (math Module)
- Command Line Arguments
- Output Statements

## 03 Flow Control

- Conditional Statements
- Iterative Statements
- Transfer Statements
- Loops with else Block
- del Statement
- Difference between del and None

## 04 String Data Type

- What is String?
- How to define multi-line String Literals?
- How to Access Characters of a String?
- Behaviour of Slice Operator
- Slice Operator Case Study



- Mathematical Operators for String
- len() in-built Function
- Checking Membership
- Comparison of Strings
- Removing Spaces from the String
- Finding Substrings
- Counting substring in the given String
- Replacing a String with another String
- Splitting of Strings
- Joining of Strings
- Changing Case of a String
- Checking Starting and Ending Part of the String
- To Check Type of Characters Present in a String
- Formatting the Strings
- Important Programs regarding String Concept
- Formatting the Strings

## 05 List Data Structure

- Creation of List Objects
- Accessing Elements of List
- List vs Mutability
- Traversing the Elements of List
- Important Functions of List
- Using Mathematical Operators for List Objects
- Comparing List Objects
- Membership Operators
- clear() Function
- Nested Lists
- Nested List as Matrix
- List Comprehensions

## 06 Tuple Data Structure

- Tuple Creation
- Accessing Elements of Tuple
- Tuple vs Immutability
- Mathematical Operators for Tuple
- Important Functions of Tuple
- Tuple Packing and Unpacking
- Tuple Comprehension
- Differences between List and Tuple

## 07 Set Data Structure

- Creation of Set Objects
- Important Functions of Set
- Mathematical Operations on the Set
- Membership Operators: (in, not in)
- Set Comprehension

## 08 Dictionary Data Structure

- How to Create Dictionary?
- How to Access Data from the Dictionary?

- How to Update Dictionaries?
- How to Delete Elements from Dictionary?
- Important Functions of Dictionary
- Dictionary Comprehension

## 09 Functions

- Built in Functions
- User Defined Functions
- Parameters
- Return Statement
- Returning Multiple Values from a Function
- Types of Arguments
- Case Study
- Types of Variables
- global Keyword
- Recursive Functions
- Anonymous Functions
- Normal Function
- Lambda Function
- filter() Function
- ap() Function
- reduce() Function
- Everything is an Object
- Function Aliasing
- Nested Functions

## 10 Modules

- Renaming a Module at the time of import (Module Aliasing)
- from ... import
- Various Possibilities of import
- Member Aliasing
- Reloading a Module
- Finding Members of Module by using dir() Function
- The Special Variable \_\_name\_\_
- Working with math Module
- Working with random Module

## 11 Packages

## 12 100 Pattern Programs

## 13 OOP's Part – 1

- What is Class?
- How to define a Class?
- What is Object?
- What is Reference Variable?
- Self Variable
- Constructor Concept
- Differences between Methods and Constructors
- Types of Variables

- Where we can declare Instance Variables
- How to Access Instance Variables
- How to delete Instance Variable from the Object
- Static Variables
- Instance Variable vs Static Variable
- Various Places to declare Static Variables
- How to access Static Variables
- Where we can modify the Value of Static Variable
- How to Delete Static Variables of a Class
- Local Variables
- Types of Methods
- Setter and Getter Methods
- Passing Members of One Class to Another Class
- Inner Classes
- Garbage Collection
- How to enable and disable Garbage Collector in our Program
- Destructors
- How to find the Number of References of an Object

## 14 OOP's Part – 2

- Inheritance
- IS-A vs HAS-A Relationship
- Composition vs Aggregation
- Types of Inheritance
- Method Resolution Order (MRO)
- Head Element vs Tail Terminology
- How to find Merge?
- Finding mro(P) by using C3 Algorithm
- super() Method
- How to Call Method of a Particular Super Class?
- Various Important Points about super()

## 15 OOP's Part – 3

- Polymorphism
- Duck Typing Philosophy of Python
- Overloading
- Overriding

## 16 OOP's Part – 4

- Abstract Method
- Abstract class
- Interface
- Concrete Class vs Abstract Class vs Interface
- Public, Private and Protected Members
- \_\_str\_\_() Method
- Difference between str() and repr() Functions
- Small Banking Application

## 17 Exception Handling

- Syntax Errors
- Runtime Errors
- What is Exception
- Default Exception Handling in Python
- Python's Exception Hierarchy
- Customized Exception Handling by using try-except
- Control Flow in try-except
- How to Print Exception Information
- try with Multiple except Blocks
- Single except Block that can handle Multiple Exceptions
- Default except Block
- finally Block
- Control Flow in try-except-finally
- Nested try-except-finally Blocks
- Control Flow in nested try-except-finally
- else Block with try-except-finally
- Various possible Combinations of try-except-else-finally
- Types of Exceptions
- How to Define and Raise Customized Exceptions

## 18 File Handling

- Types of Files
- Opening a File
- Closing a File
- Various Properties of File Object
- Writing Data to Text Files
- Reading Character Data from Text Files
- The with Statement
- The seek() and tell() Methods
- How to check a particular File exists OR not
- Handling Binary Data
- Handling CSV Files
- Writing Data to CSV File
- Reading Data from CSV File
- Zipping and Unzipping Files
- To Create Zip File
- Working with Directories
- Running Other Programs from Python Program
- How to get Information about a File
- Pickling and Unpickling of Objects

## 19 Multi Threading

- Multi Tasking
- The ways of Creating Thread in Python
- Setting and Getting Name of a Thread
- Thread Identification Number (ident)
- enumerate() Function
- isAlive() Method
- join() Method
- Daemon Threads

- Default Nature
- Synchronization
- Synchronization By using Lock Concept
- Problem with Simple Lock
- Demo Program for Synchronization by using RLock
- Difference between Lock and RLock
- Synchronization by using Semaphore
- Bounded Semaphore
- Difference between Lock and Semaphore
- Inter Thread Communication
- Inter Thread Communication by using Event Objects
- Methods of Event Class
- Inter Thread Communication by using Condition Object
- Methods of Condition
- Case Study
- Inter Tread Communication by using Queue
- Important Methods of Queue
- Types of Queues
- Good Programming Practices with usage of Locks

## 20 Python Database Programming

- Storage Areas
- File Systems
- Databases
- Python Database Programming
- Working with Oracle Database
- Installing cx\_Oracle
- How to Test Installation
- Working with MySQL Database
- Commonly used Commands in MySQL
- Driver/Connector Information
- How to Check Installation

## 21 Regular Expressions & Web Scraping

- Character Classes
- Pre defined Character Classes
- Quantifiers
- Important Functions of Remodule
- Web Scraping by using Regular Expressions

## 22 Decorator Functions

- Decorator Chaining

## 23 Generator Functions

- Advantages of Generator Functions
- Generators vs Normal Collections wrt Performance
- Generators vs Normal Collections wrt Memory Utilization

## 24 Assertions

- Debugging Python Program by using assert Keyword
- Types of assert Statements
- Exception Handling vs Assertions

## 25 Python Logging

- Logging Levels
- How to implement Logging
- How to configure Log File in over writing Mode
- How to Format Log Messages
- How to add Timestamp in the Log Messages
- How to Change Date and Time Format
- How to write Python Program Exceptions to the Log File
- Problems with Root Logger
- Need of Our Own Customized Logger
- Advanced logging Module Features: Logger
- Logger with Configuration File
- Creation of Custom Logger
- How to Create separate Log File based on Caller
- Advantages of Customized Logger



*Develop a passion for learning. If you do, you will never cease to grow.*



Let us know how we can help you, or your  
organisation with your learning or  
talent requirements.

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